With respect to the *Ai*, or three-toed Sloth, "an animal, great part of whose life, when not engaged in eating, is spent in sleeping on trees,—an easy attitude for repose is most essential to its comfortable existence; and accordingly we find, that the auxiliary vertebræ at the base of the neck contribute to produce that flexibility of this organ which allows the head of the animal to incline forwards and rest upon its bosom." Dr. Buckland, from whose Paper on the "Adaptation of the Structure of the Sloths to their peculiar Mode of Life,"* the preceding judicious physiological remark is quoted, adduces the authority of Mr. Burchell in proof that the Sloth can in a remarkable manner and with great facility twist its head quite round, and look in the face of a person standing directly behind it, while at the same time the body and limbs remain unmoved. A single glance at the length and slenderness of the cervical region of the spine, and of the feeble condition of the transverse and spinous processes in the vertebræ composing that part of the skeleton of the Sloth, is enough to show its adaptation to increase the rotatory motion and flexibility of the neck.

In describing the skeleton of a species of Armadillo (*Dasypus 6-cinctus*, Linn.)† I was led in like manner to point out the subserviency of the peculiarities of the cervical vertebræ to the habits and mode of life of that animal; observing that the "anchylosis of the cervical vertebræ obtains in the *Cetacea*, as well as in the genus *Dasypus*, and that as in the aquatic order this firm connexion of the cervical vertebræ assists materially in enabling the head to overcome the resistance of the dense fluid through which they perpetually move, so in the Armadillos a like advantage may be derived from this structure during the act of displacing the denser material in which they excavate their retreats."‡

Having in view these well-marked examples of the subserviency of the structure of the bones of the neck to the habits of existing species of the order *Bruta*, I proceeded to investigate the structure of the corresponding part of the skeleton in the *Scelidotherium*, hoping thereby to gain a new and useful element in the determination of the problem at present under discussion, as to the affinities and habits of the extinct Megatherioid quadrupeds.

The fossil, in its original state, yielded a view of so much of the anterior part of the bodies of the cervical vertebræ as proved that they were neither so numerous as in the Sloth, nor anchylosed together as in the Armadillos: after a long and careful chiselling at the hard matrix in which they were imbedded, the transverse and spinous processes were exposed to view, as they are represented in Plates XX. and XXIV. The description of these processes has already been given.

* Linn. Trans. vol. xvii. (1833) p. 17. † Zool. Proceedings, 1832, p. 134.

‡ The anterior prolongation of the sternum in front of the neck and the corresponding anterior position of the clavicles and scapulæ occasions a transference of such a proportion of the moving powers of the head from the cervical vertebræ to these bones in the mole, as renders any modifications of these vertebræ, like those in the Armadillo, uncalled for.

On comparing the cervical vertebræ of the Scelidotherium with those of the existing *Bruta*, the closest resemblance to them was found in the skeleton of the Orycterope. Now this quadruped, though not so rapid a burrower, or so strictly a subterranean species as the Armadillos, participates, nevertheless, to a certain extent, in their fossorial habits, and is closely allied to them in general structure: it differs from them, indeed, mainly in a modification of the dental system, in the absence of dermal armour, and of anchylosis of the cervical vertebræ. But the advantages which, as a burrower, it would have derived from the latter structure, are compensated for by the shortness of the cervical vertebræ, and by the great development and imbricated or interlocking co-adaptation of the transverse and anterior spinous processes of the cervical vertebræ. The analogous quadruped in the South American Continent—the great ant-eater (*myrmecophaga jubata*) which uses its powerful compressed fossorial claws for breaking through the hard walls of the habitations of its insect prey, but which does not excavate a subterraneous retreat for itself, presents the cervical vertebræ of a more elongated form, and without that development of the spinous and transverse processes which tend to fix the neck and increase the size of the muscles which move the head: and, if we could conceive that its fore-feet were employed to scratch up vegetable roots, instead of disinterring termites, there would be no reason to expect any modification of the cervical vertebræ as a direct consequence of such a difference in the application of its fossorial extremities: when, therefore, we find that the cervical vertebræ do actually differ in two myrmecophagous species, to the extent observable in the Cape and South American ant-eaters, we arrive legitimately at the conclusion that such difference relates to fossorial habits of the one species, in which habits the other does not participate.

Now, therefore, if this conclusion be just in regard to the Orycterope, it must bear with more force upon the question of the habits of the Scelidotherium as the mechanism for strengthening the connection of cervical vertebræ, and for augmenting the surface of attachment of the muscles which worked the head and neck, is more strongly wrought out in that extinct species.

The great size and strength of the spinous process of the dentata, and the mode in which it is interlocked with the spinous and oblique processes of the third cervical, together with the imbricated disposition of the transverse processes of this and the succeeding vertebræ, and the remarkable height of the dorsal spines, all combine to indicate in a very striking manner, if not to demonstrate, that the conical head of the present species, which is comparatively small and slender, and